WHAT IS CLAIMED IS:

1. An optoelectronic device, comprising:

a substrate having a first doped region adjacent a first outer surface and a second doped region adjacent a second outer surface;

a wave guide located in said substrate and located between said first outer surface and said second outer surface; and

a capacitor located over one of said first outer surface or said second outer surface.

2. The optoelectronic device as recited in Claim 1 further including a metal layer located on one of said first outer surface or said second outer surface, said metal layer comprising a first electrode of said capacitor, a dielectric located over said first electrode and a second electrode located over said dielectric.

3. The optoelectronic device as recited in Claim 1 wherein said optoelectronic device is a tunable laser and said substrate further includes a gain region, a tuning region, an amplifier region and a modulator region.

4. The optoelectronic device as recited in Claim 3 wherein said substrate further includes a grating region.

5. The optoelectronic device as recited in Claim 3 wherein said first doped region is a p-type doped region and said gain region, said tuning region, said amplifier region and said modulator region are located in said p-type doped region and said second doped region is an n-type doped region and said capacitor is located on said second outer surface and an electrode of said capacitor is electrically coupled to said p-type doped region.

6. The optoelectronic device as recited in Claim 1 wherein said substrate comprises indium phosphide and said first doped region is a p-type doped region and said second doped region is an n-type doped region and said capacitor is located on said second outer surface.

7. The optoelectronic device as recited in Claim 1 wherein a dielectric layer of said capacitor is a silicon dioxide or a tantalum pentoxide.

8. A method of manufacturing an optoelectronic device, comprising:

forming a first doped region adjacent a first outer surface of a substrate;

forming a second doped region adjacent a second outer surface of said substrate;

creating a waveguide in said substrate; and

forming a capacitor over one of said first outer surface or said second outer surface.

9. The method as recited in Claim 8 wherein forming a capacitor includes placing a first electrode metal layer on one of said first outer surface or said second outer surface, forming a dielectric over said first electrode and forming a second electrode over said dielectric.

10. The method as recited in Claim 8 wherein said optoelectronic device is a tunable laser and said method further includes forming a gain region, a tuning region, an amplifier region and a modulator region in said substrate.

11. The method as recited in Claim 10 further including forming a grating region in said substrate.

12. The method as recited in Claim 10 wherein forming said first doped region includes forming a p-type doped region and forming said gain region, said tuning region, said amplifier region and said modulator region includes forming said gain region, said tuning region, said amplifier region and said modulator in said p-type doped region;

forming said second doped region includes forming an n-type doped region; and

forming said capacitor includes forming said capacitor on said second outer surface and includes electrically connecting an electrode of said capacitor to said p-type doped region.

13. The method as recited in Claim 8 wherein said substrate comprises indium phosphide and forming said first doped region including forming a p-type doped region and forming said second doped region includes forming an n-type doped region and forming said capacitor includes forming said capacitor on said second outer surface.

14. The method as recited in Claim 8 wherein forming said capacitor includes forming a dielectric layer comprising silicon dioxide or tantalum pentoxide.

15. An integrated optoelectronic system, comprising:

at least one optical device, including:

an optical substrate having a first doped region adjacent a first outer surface and a second doped region adjacent a second outer surface;

a wave guide located in said substrate and located between said first outer surface and said second outer surface; and

a capacitor located over one of said first outer surface or said second outer surface;

an optical fiber coupled to said at least one optical device and located on or within said semiconductor substrate; and

a detector coupled to said at least one optical device.

16. The integrated optoelectronic system as recited in Claim 15 further including a metal layer located on one of said first outer surface or said second outer surface, said metal layer comprising a first electrode of said capacitor, a dielectric located over said first electrode and a second electrode located over said dielectric.

17. The integrated optoelectronic system as recited in Claim 15 wherein said optical device is a tunable laser and said optical substrate further includes a gain region, a tuning region, an

amplifier region and a modulator region.

18. The integrated optoelectronic system as recited in Claim 17 wherein said optical substrate further includes a grating region.

19. The integrated optoelectronic system as recited in Claim 17 wherein said first doped region is a p-type doped region and said gain region, said tuning region, said amplifier region and said modulator region are located in said p-type doped region and said second doped region is an n-type doped region and said capacitor is located on said second outer surface and an electrode of said capacitor is electrically coupled to said p-type doped region.

20. The integrated optoelectronic system as recited in Claim 15 wherein said optical substrate comprises indium phosphide and said first doped region is a p-type doped region and said second doped region is an n-type doped region and said capacitor is located on said second outer surface.